



CLEAN WATER ACTION

645 Farmington Avenue, Hartford CT 06105

Written Testimony of Roger Smith, New England Energy Program Director and Anne Hulick, Toxics and Health Coordinator

Before the Environment Committee, February 9, 2011

Testimony in Support of SB 830 "An Act Prohibiting The Use Of Certain Outdoor Wood Burning Furnaces"

Thank you for the opportunity to provide written comments in support of Senate Bill 830. Roger Smith is the Energy Program Director and Anne Hulick is the Toxics and Health Coordinator for Clean Water Action. Clean Water Action is a non-profit organization with one million members nationwide and more than 20,000 members in Connecticut. Our Hartford-based staff works with local groups and citizen leaders around the state on issues affecting our health, environment, and quality of life.

Clean Water Action sincerely appreciates the Environment Committee's long track record of leadership on environmental health issues and support of clean energy solutions. We ask for your assistance addressing the problem of high winter levels of fine particulate matter. Wood smoke, particularly from outdoor wood burning furnaces, poses serious environmental and health risks to all state residents. With a rise in the number of outdoor wood furnaces and inadequate regulations, we urge members of the Environment Committee to support SB 830.

Health Problems associated with Wood Smoke

Wood smoke contains many of the toxic chemicals found in cigarette smoke including carbon monoxide, carcinogens such as dioxin and formaldehyde and other toxic air pollutants. Fine particles from incomplete combustion (which are also the main element of diesel exhaust) can penetrate deeply into the lungs, are irritants and pose serious health risks. Outdoor wood furnaces or boilers create a cloud of fine particles at ground level that are small enough that they can not be kept out by closing doors and windows, and can accumulate inside homes.

Wood smoke can interfere with normal lung development in infants and children, depress the immune system and damage the lining of the lungs that protects and removes harmful substances from the airways. Exposure to wood smoke can increase the risk, particularly in children of lower respiratory infections such as bronchitis and pneumonia and exacerbate asthma symptoms. Wood smoke is also a serious irritant causing coughs, headaches, and irritation to eyes and throats. Children and the elderly are the most vulnerable to wood smoke and people with chronic obstructive pulmonary disease and cardiovascular are at particular risk.

Why Outdoor Wood Furnaces are of Particular Concern

Outdoor wood furnace design is opposite from that of an efficient indoor wood furnace. To minimize pollution, dry wood should be combusted completely at high temperatures in the presence of oxygen. In contrast, outdoor wood furnaces burn wood to heat water to a maximum temperature and once that temperature is reached, starve the wood fire of oxygen, which begins to cool it. As a result, many outdoor wood furnaces spend much of their time idling in this mode where the wood smolders and releases large amount of smoke. This type of design contributes to incomplete combustion and soot formation. Outdoor wood furnaces are often used to burn materials other than dry wood which further adds to the smoke and toxic chemicals being emitted from the stack.

Evidence of the Harm Caused by Outdoor Wood Furnaces

The Northeast States for Coordinated Air Use Management (NESCAUM) tested emissions from outdoor wood furnaces and found that the average fine particulate matter from just one furnace was equivalent to the emissions from 22 EPA certified indoor wood stoves, 205 oil furnaces, or up to 8,000 natural gas furnaces. One outdoor wood furnace can emit as much particulate matter per hour as four heavy duty diesel trucks. On an annual basis, a small wood furnace has the potential to emit almost 1.5 tons of particulate matter.¹ To put that into comparison, the DEP 2005 diesel plan indicated that *all the transit buses in Connecticut* emit approximately 3.3 tons of fine particulate matter per year. EPA Phase II standards for outdoor wood furnaces are voluntary and not health protective.

In addition, set-back and stack height regulations are inadequate to protect the health of nearby citizens. Fine particulate matter emitted from outdoor wood furnaces is so small that even the most tightly sealed homes can not keep out wood smoke. A 2010 study conducted by Environment and Human Health, Inc. on indoor air quality in homes located 100-850 feet from an outdoor wood furnace demonstrated that fine particulate matter, one of the most dangerous components of wood smoke, was found significantly above EPA levels for extended periods in each home. Even the house located 850 feet from the outdoor furnace had measured levels of particulate matter *four times higher* than EPA standards, proving that set-back regulations are inadequate. Levels of fine particulate matter that exceed those established by the EPA are associated with asthma, exacerbation of COPD, risks of cardiovascular problems and increased hospitalizations.²

A 2006 study, reported in the Journal of the American Medical Association, cites that even short term exposures to fine particulate matter is associated with an increased risk of hospital admissions for cardiac and respiratory problems.³

Wood Boilers and Energy

From a heating perspective, outdoor wood boilers make no sense for most Connecticut residents. Economically, homeowners would be better served by turning first to energy conservation, especially insulating and sealing air leaks, before installing large heat sources. Most homes could meet their home heating needs using a far less polluting indoor wood unit. Outdoor units are also impractical for most of the state as they require frequent trips outside to put in more wood and need large a supply of cheap (or free) wood to ever be economical.

The research is clear. Exposure to wood smoke emitted from outdoor wood burning furnaces is a serious public health hazard that knows no boundaries. Clean Water Action appreciates the opportunity to provide testimony in support of SB 830 and urges the Environment Committee to pass this important environmental health bill.

Sincerely,

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¹ Northeast States for Coordinated Air Use Management, *Assessment of Outdoor Wood-Fired Boilers*, March 2006, viii.

² Environment and Human Health, Inc. *The Dangers To Health From Outdoor Wood Furnaces*, 2010, 16-17.

³ Francesca Domenici, Roger D. Peng, Michelle L. Bell, Lu Phamun, Aidan McDermott, Scott L. Zeger, Jonathan M. Samet, JAMA, *Fine Particulate Air Pollution And Hospital Admission For Cardiovascular And Respiratory Diseases*, 2006; 295 (10): 1127-1134.